GENERIC SPECIFICATION FOR
MULTIFUNCTION POWER AND ENERGY METER
SHARK ® 100 METER

2. PRODUCT

2.1 POWER METERS

A. The meter shall be UL listed and CE marked.

B. Power meter shall be designed for Multifunction Electrical Measurement on 3 phase power systems.

1. Meter shall support 3 element Wye, 2.5 element Wye, 2 element Delta, 4 wire Delta systems.
2. The meter shall accept universal voltage input.
3. Surge withstand shall conform to IEEE C37.90.1
4. The meter shall be user programmable for voltage range to any PT ratio.
5. Meter shall accept a burden of up to .36VA per phase, Max at 600V, 0.014VA at 120 Volts.
6. The meter shall accept a voltage input range of up to 416 Volts Line to Neutral, and a range of up to 721 Volts Line to Line.
7. Meter shall accept a current reading of up to 11 amps continuous.

C. Power meter shall use a dual input method for current inputs. Method one shall allow the CT to pass directly through the meter without any physical termination on the meter, ensuring the meter cannot be a point of failure on the CT circuit. The second method shall provide additional termination pass-through bars, allowing the CT leads to be terminated on the meter. The meter must support both termination methods.

1. Fault Current Withstand shall be 100 Amps for 10 seconds, 300 Amps for 3 seconds, and 500 Amps for 1 second.
2. Meter shall be programmable for current to any CT ratio. DIP switches or other fixed ratios shall not be acceptable
3. Meter shall accept burden of 0.005VA per phase, Max at 11 Amps.
4. Meter shall begin reading at a 5mA pickup current.
5. Pass through wire gauge dimension of 0.177” / 4.5 mm shall be available.
6. All inputs and outputs shall be galvanically isolated to 2500 Volts AC.
7. The meter shall accept current inputs of class 10: (0 to 11) A, 5 Amp Nominal, and class 2 (0 to 2) A, 1A Nominal Secondary.

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D. The meter shall have an accuracy of +/- 0.1% or better for volts and amps, and 0.2% for power and energy functions. The meter shall meet the accuracy requirements of IEC687 (class 0.2%) and ANSI C12.201(Class 0.2%).

1. The meter shall provide true RMS measurements of voltage, phase to neutral and phase to phase; current, per phase and neutral.
2. The meter shall provide sampling at 400+ samples per cycle on all channels measured readings simultaneously.
3. The meter shall utilize 24 bit Analog to Digital conversion.
4. Meter shall provide Harmonics %THD (% of total Harmonic Distortion).

E. The meter shall include a three line, bright red, .56" LED display.

1. The meter shall fit in both DIN 92mm and ANSI C39.1 Round cut-outs.
2. The meter must display a % of Load Bar on the front panel to provide an analog feel. The % Load bar shall have not less than 10 segments.

F. Meter shall be available in transducer only version, which shall not include a display.

1. The meter shall mount directly to a DIN rail and provide RS485 Modbus or DNP 3.0 output.

G. Power meter shall include virtual measurement upgrade packs, which shall allow user to upgrade in field without removing installed meter.

1. Four upgrade packs shall be:
    a. Volts and Amps Meter – Default
    b. Volts, Amps, kW, kVAR, PF, kVA, Freq.
    c. Volts, Amps, kw, kVAR, PF, kVA, Freq., kWh, kVAh, kVARh.
    d. Volts, Amps, kW, kVAR, PF, kVA, Freq., kWh, kVAh, kVARh, %THD Monitoring and Limit Exceeded Alarms.
2. These virtual upgrade packs must be able to be updated without physically removing the installed meter.
3. Meter shall be a traceable revenue meter, which shall contain a utility grade test pulse allowing power providers to verify and confirm that the meter is performing to its rated accuracy.

H. The meter shall include 2 independent communications ports on the back and face plate, with advanced features.

1. One port shall provide RS485 communication speaking Modbus ASCII, Modbus RTU, or DNP 3.0 protocol through back plate.
2. Baud rates shall be from 9,600 baud to 57,600 baud.

3. The meter shall provide an optical IrDA port (through faceplate), as the second communication port, which shall allow the unit to be set up and programmed using a remote laptop PC without need for a communication cable.
4. Meter shall have 8 Bit, No parity.

I. The meter shall have optional 100BaseT Ethernet communication capability.

1. Ethernet communication shall consist of Modbus protocol over TCP/IP.

J. The meter shall provide user configured fixed window or rolling window demand. This shall allow user to set up the particular utility demand profile.

1. Readings for kW, kVAR, kVA and PF shall be calculated using utility demand features.
2. All other parameters shall offer max and min capability over the user selectable averaging period.
3. Voltage shall provide an instantaneous max and min reading displaying the highest surge and lowest sag seen by the meter.

K. The meter shall support power supply of 90 to 265 Volts AC and 100 to 370 Volts DC. Universal AC/DC Supply shall be available.

1. Meter power supply shall accept burden of 10VA max.
2. Meter shall provide upgrade rate of 100msec for Watts, Var and VA. All other parameters shall be 1 second.

L. The meter shall have a standard 4-year warranty.

M. Power meter shall be able to be stored in (-20 to +70) degrees C.

1. Operating temperature shall be (-20 to +70) degrees C.
2. NEMA 12 faceplate rating shall be available for the power meter.

N. The following options shall be available for ordering:

	Model	Frequency	Current Class	V-Switch Pack	Communication Format (Shark 100 Only)	Mounting (Shark 100 Only)
Options	Shark 100					
	Shark 100 Shark 100T	-50: 50 HZ System -60: 60 HZ System	-10: 5 Amp Secondary -2 : 1 Amp Secondary	-V1: Default V-Switch Volts/Amps -V2: Above with Power and Freq. -V3: Above with Energy Counters -V4: Above with Harmonics and Limits	-X: No Com -485: RS485 -INP10: 100BaseT Ethernet	-X: ANSI Mounting -DIN: DIN Mounting Brackets

N. Acceptable product is Electro Industries/GaugeTech, Model Shark 100.

1. Add the following suffixes for added options:

   a. (9PINC) – RS232 Cable
   b. (Unicom 2500) – RS485 to RS232 Converter
   c. (Unicom 2500-F) – RS485 to RS232 to Fiber Optic Converter
   d. (Modem Manager, Model #, MM1) – RS485 to RS232 Converter for Modem Communication
   e. (CAB6490) – IrDA to USB Adapter for Remote Read
   f. (Certificate of Calibration, Part #, CCal) – This provides Certificate of Calibration with NIST traceable test data.
   g. (CT200K) – 200/5 Ratio, 1” Window 3 CTs
   i. (CT400K) – 400/5 Ratio, 1.25” Window, 3 CTs
   i. (CT800K) – 800/5 Ratio, 2.06” Window, 3 CTs
   j. (CT2000K) – 2000/5 Ratio, 3.00” Window, 3 CTs
   k. (COMEXT3) – Communicator EXT 3.0 for Windows

2. For specification information, contact:

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